

## REMARKS

Favorable consideration and allowance of the claims of the present application are respectfully requested.

In the present Official Action, the Examiner first rejected Claims 1-5 and 17-20 under 35 U.S.C. §103(a) as allegedly being unpatentable over Pittel (US 2003/0095708) (“Pittel”) in view of Schiller (US 2002/0031243) (“Schiller”).

As a preliminary matter, to further define the invention, Claim 1 (and independent Claims 9 and 17) is being amended to further set forth that the “stylus” (writing tool implemented in such a system) is non-electronic (or “passive”) as opposed to the pen (e.g., as taught in the applied prior art reference to Pittel), for example, that is light-emitting, or at least, electronically equipped with a light producing source (e.g., Infrared (IR) or other light source) for enhanced tracking recognition (improved signal to noise ratio). Respectfully, no new matter is being added as the present specification, e.g., at paragraphs [0026] and [0027] describes the stylus (or pen) in the system of the invention as “plastic” or “simple”. In fact, it is an advantageous feature that the invention is applicable for a low-cost case when the stylus pen is just a simple stylus with no electronics inside. Claims 2,4, 7, 12, 14-16, 18-19 and 21-22 are further being amended in accordance with the changes to Claims 1, 9 and 17.

With respect to the rejection of Claims 1-5 and 17-20 under 35 U.S.C. §103(a) as being unpatentable over Schiller in view of Pittel, Applicant respectfully disagrees.

In the present application, as set forth in amended Claim 1, applicant has provided a “hybrid” system that combines two on-line systems: touch screen and camera - both of which provide dynamic - on-line - information about how the writing is created.

As claimed in Claim 1, applicant's system provides a first dynamic handwriting recognition system capability, i.e., a touch screen generating dynamic information associated with non-electronic stylus writing; and a second dynamic handwriting recognition system capability, i.e., a digital image capture means mounted in a pervasive device for obtaining images of a non-electronic stylus as a user writes on a touch screen, and processing the obtained images to extract non screen-related information associated with non-electronic stylus manipulation by the user. The invention further provides for a handwriting recognition means receiving both the dynamic touch screen information and extracted non touch screen-related information from the processed images.

While the Examiner correctly points out in the rejection of Claim 1 (and independent Claims 9 and 17) of the Office Action that "Schiller... teaches the use of a touch screen device (digitizing pad) on a PDA", applicant respectfully submits that this is only one aspect which is the traditional prior art aspect of using a tracking device for dynamic handwriting recognition (captured data is 2-dimensional X, Y vectors (See paragraph [0060] of Schiller)) obtained from the actual writing on the plane of the digitizing pad. Thus, Schiller includes software that will do the handwriting recognition based on the touch screen – only- and thus corresponds to a prior art system described in the present invention with respect to Fig. 2.

Respectfully, Pittel is of no hope in this regard. Pittel does speak to using a digital camera for hand motion capturing in general. However, the thrust of Pittel is the application of a digital camera with any portable device, i.e., a device characterized by Pittel as NOT HAVING a touch screen to perform handwriting and handmotion recognition. The Pittel

system thus only corresponds to a prior art system described in the present invention with respect to Fig. 1.

Moreover, Pittel's calculation of the tilt using a camera device is valid only in the case when the pen used is an "active" pen -meaning the pen has light sources (LEDs, IR, or other sources) embedded in it. See, for example, [0027], [0028] [0042]-[0043] in Pittel as well as Fig. 2, 3, 4 and 5. The present invention, as set forth in amended Claims 1, 9 and 17 teaches a low-cost implementation when pen is just a simple stylus and non-electronic. Moreover, even though the Examiner states in the rejection of Claim 1 about Pittel teaching "that a camera provides a real time approach", in paragraph 0022 – again, applicant again reiterates that Pittel teaches an active pen with LED or IR sources embedded in it.

The present invention, to the contrary, contemplates a dynamic handwriting recognition system that uses a "passive" (non-electronic) stylus. Moreover, even though the active (light-emitting) pen is described in the primary embodiment of Pittel, Pittel actually mentions tracking a "passive" writing instrument – however, by only looking at the traces of ink on the writing surface as captured by a camera having pixels mapped to the writing surface (see paragraph [0079] of Pittel (and see also Pittel at paragraphs [0082] – [0083] where ink at the writing surface is captured in a 2-D sense by a camera.

Examiner alleges that it would be obvious to combine the Schiller and Pittel systems for improving handwriting recognition, applicant still fails to recognize how such a combination of Pittel and Schiller renders the invention as obvious.

Schiller provides a pure handwriting recognition solution for a touch screen device (digitizing pad) on a PDA with absolutely no teaching or suggestion that this system is combinable with a camera based system for tracking non-electronic stylus pen movement associated with the handwriting.

Pittel does not teach or suggest use of handwriting recognition as the implementation described in Pittel does not lend itself to, and actually teaches away from, use of a touch sensitive screen (Claims of Pittel explicitly state that the display is not touch sensitive). Pittel only provides for handwriting recognition based on the digital camera information. There is no system, nor software described in Pittel that will do the handwriting recognition based on the touch screen - only camera information is used. For example, see Pittel at paragraph [0004], seven lines from the bottom where it is explicitly stated that "The display is not touch sensitive", and see Pittel also at paragraph [0071] where it is described that the writing surface may be absent at all.

Thus, the two references are non-combinable as each, being stand-alone handwriting recognition systems of disparate modalities, teaches away from the use of the other. Heretofore, there has never been any teaching or suggestion to combine the two disparate handwriting recognition systems in the low-cost manner as now claimed.


Moreover, Pittels solution requires an active stylus, one that requires light emitting sources, whereas the present invention is a lower cost solution for use with passive (non-electronic) pens.

In sum, the Examiner's rejection of Claim 1 (and rejected method Claim 9 and 17) is respectfully traversed and applicant submits Claims 1, 9 and 17 as patentable over the Pittel and Schiller whether taken alone or in combination.

Thus, the Examiner is respectfully requested to withdraw the rejections of Claims 1-5 and 17-20 under 35 U.S.C. §103(a) as allegedly being unpatentable over Pittel in view of Schiller and, further, to withdraw the rejections of all remaining dependent claims.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Accordingly, it is respectfully requested that this application be allowed and a Notice of Allowance be issued. If the Examiner believes that a telephone conference with the Applicants' attorneys would be advantageous to the disposition of this case, the Examiner is requested to telephone the undersigned, Applicants' attorney, at the following telephone number: (516) 742-4343.

Respectfully submitted,

  
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